

cated, and extends over a large or small space, according to the force of the disturbing cause, and billow rolls after billow, increasing the uproar of the wild waters. This also accounts for the fact, that when the waves have been some time in motion, they do not immediately sink to rest when the wind ceases, but the level is restored by degrees, the waves decreasing in height, and becoming shorter, until they are reduced to a mere ripple.

It is well known to mariners that there is a great difference in the appearance and effects of waves in different seas. It has been frequently stated that the waves of the British seas are quick and violent, much more dreaded by sailors than the slow, spreading, heavy waves of the Bay of Biscay. The imagination can scarcely fancy a vast mass of water rolling up the Bell Rock lighthouse to the height of one hundred feet, yet this has been frequently known; and Mr. Macdonald, who was there during the gales of October, 1824, states, that the waves rose in an unbroken state to the height of sixty-four feet, and some to the height of ninety feet, and, being separated, they darted to the leeward of the house, leaving it at one end of an avenue of water.

TIDES.

The most constant and important motion of the sea is that which it periodically suffers in consequence of the attractive force of the sun and moon. The tides, as these oscillatory movements are called, have long been supposed to have some connexion with the position of the moon; for Pythias, Pliny, Ptolemy, and other ancient astronomers, confess their belief in this doctrine. Galileo, Descartes, Kepler, and others, also refer to the same cause, though their notions were exceedingly indefinite. "The orb of the attracting power possessed by the moon," says the illustrious Kepler, "is extended as far as the earth, and draws the water under the torrid zone, acting upon places where it is vertical, insensibly upon confined seas and bays, but sensibly on the ocean, whose beds are large, and where the waters have the liberty of reciprocation, that is, of rising and falling." But it was left for Newton, the greatest of all philosophers, to determine the nature of the lunar attraction, and the laws by which that force is governed. Great as the volume of water upon the surface of the earth is, it has a